



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/526,309

03/02/2005

Patrik Hartherz

R.303742

3844

2119 7590 10/12/2007
RONALD E. GREIGG
GREIGG & GREIGG P.L.L.C.
1423 POWHATAN STREET, UNIT ONE
ALEXANDRIA, VA 22314

EXAMINER

GREENE, JASON M

ART UNIT

PAPER NUMBER

1797

MAIL DATE

DELIVERY MODE

10/12/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/526,309

Applicant(s)

HARTHERZ, PATRIK

Examiner

Jason M. Greene

Art Unit

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-31 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 12-31 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 3/2/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Claims

1. With regard to claim 12, the Examiner suggests Applicants rewrite the phrase "the oxidatively aid means" bridging lines 4-5 as "the oxidatively acting aid" to clarify antecedent basis.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 12, 18, 22 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by German Patent Application Publication DE 34 40 689 A1.

DE 34 40 689 A1 discloses a method for post-treatment of the exhaust gas (31) of an internal combustion engine (3), in which particles contained in the exhaust gas are

Art Unit: 1797

at least partially eliminated with the at least intermittent use of an oxidatively acting aid (ozone), and comprising effecting an at least partial removal of nitric oxides from the exhaust gas, and delivering the oxidatively acting aid to the exhaust gas in metered fashion (based on engine speed) in such a way that the removal of nitric oxides from the gas is reinforced, wherein the oxidatively acting aid is generated (in 7) outside the exhaust gas system in Fig. 1 and the English language abstract.

4. Claims 12, 22, 23, 28 and 30 are rejected under 35 U.S.C. 102(e) as being anticipated by Twigg et al. (US 6,557,340 B1).

Twigg et al. discloses a method for post-treatment of the exhaust gas of an internal combustion engine (1), in which particles contained in the exhaust gas are at least partially eliminated with the at least intermittent use of an oxidatively acting aid (ozone generated in plasma generator 5), and comprising effecting an at least partial removal of nitric oxides from the exhaust gas, and delivering the oxidatively acting aid to the exhaust gas in metered fashion (based on engine operating conditions, see col. 2, lines 60-64) in such a way that the removal of nitric oxides from the gas is reinforced, and employing a storage-type catalytic converter or an apparatus for selective catalytic reduction for at least partial removal of nitric oxides from the exhaust gas (see col. 2, lines 46-59) in Fig. 1 and col. 2, line 10 to col. 3, line 38.

5. Claims 12-14, 18-20, 22-26, 28 and 29 are rejected under 35 U.S.C. 102(e) as being anticipated by Daniel et al. (US 6,976,353 B2).

Daniel et al. discloses a method for post-treatment of the exhaust gas of an internal combustion engine (112), in which particles contained in the exhaust gas are at least partially eliminated with the at least intermittent use of an oxidatively acting aid (plasma from generator 12), and comprising effecting an at least partial removal of nitric oxides from the exhaust gas, and delivering the oxidatively acting aid to the exhaust gas in metered fashion in such a way that the removal of nitric oxides from the gas is reinforced, and further comprising determining the proportion of nitrogen dioxide in the exhaust gas (using sensors 428,430) and delivering the oxidatively acting aid as a function of the proportion of nitrogen dioxide (see col. 12, lines 48-55 and col. 16, lines 48-67), wherein the proportion of nitrogen dioxide is determined downstream of the point where the particle elimination is effected (filter 404, when the filter is located downstream of the NOx trap 402, see col. 15, lines 35-47), wherein a particle filter (404) is used for at least partial elimination of the particulates and wherein the metering in of the oxidatively acting aid is effected upstream and downstream of the particulate filter (see Fig. 9, when the filter is located downstream of the NOx trap 402), and employing a storage-type catalytic converter or an apparatus for selective catalytic reduction (232,234 or 402) for at least partial removal of nitric oxides from the exhaust gas in Figs. 3-9, col. 8, line 1 to col. 17, line 24.

6. Claim 31 is rejected under 35 U.S.C. 102(e) as being anticipated by Twigg et al. (US 6,557,340 B1).

Twigg et al. discloses an apparatus for post-treatment of the exhaust gas of an internal combustion engine (1) comprising a particle filter (3), means (5) for furnishing an oxidatively acting aid for operating the particle filter, and a nitric oxide removal device (not shown, see col. 2, lines 46-59) for at least partial removal of nitric oxides from the exhaust gas downstream of the particle filter in terms of the flow direction of the exhaust gas in Fig. 1 and col. 2, line 10 to col. 3, line 38.

7. Claim 31 is rejected under 35 U.S.C. 102(e) as being anticipated by Daniel et al. (US 6,976,353 B2).

Daniel et al. discloses an apparatus for post-treatment of the exhaust gas of an internal combustion engine (112) comprising a particle filter (404), means (12) for furnishing an oxidatively acting aid for operating the particle filter, and a nitric oxide removal device (402) for at least partial removal of nitric oxides from the exhaust gas downstream (see col. 15, lines 35-47) of the particle filter in terms of the flow direction of the exhaust gas in Figs. 8 and 9, col. 8, line 1 to col. 17, line 24.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Twigg et al. (US 6,557,340 B1) in view of Pfeifer et al. (US 2002/0170433 A1).

Twigg et al. discloses measuring certain engine operating conditions (e.g. soot and load) which generate more soot and effecting the metering of the oxidatively acting aid as a function of the measurements in col. 2, line 60 to col. 3, line 1, but it fails to explicitly teach measuring the temperature of the exhaust gas.

As mentioned by Pfeifer et al. in paragraph [0003], it is well known in the art that lower combustion temperatures (and hence lower exhaust gas temperatures) result in increased soot generation.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a measurement of the exhaust gas temperature into the method of Twigg et al. since lower exhaust gas temperature is indicative of increased soot generation, as taught by Pfeifer et al. in paragraph [0003].

10. Claims 15-17, 21 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daniel et al. (US 6,976,353 B2) in view of Twigg et al. (US 6,557,340 B1) and Pfeifer et al. (US 2002/0170433 A1).

Daniel et al. discloses measuring the concentration of nitrogen dioxide in the exhaust gas and effecting the metering of the oxidatively acting aid as a function of the measurement, but does not teach measuring the temperature of the exhaust gas and metering of the oxidatively acting aid as a function of the temperature.

Twigg et al. teaches a similar method wherein engine operating conditions (e.g. soot and load) which generate more soot are measured and effecting the metering of an oxidatively acting aid as a function of the measurements. As mentioned by Pfeifer et al. in paragraph [0003], it is well known in the art that lower combustion temperatures (and hence lower exhaust gas temperatures) result in increased soot generation.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate exhaust gas temperature monitoring and corresponding metering in of the oxidatively acting aid into the method of Daniel et al. to assist in the elimination of soot particles produced when the engine is operating in a condition which produce excess soot, as suggested by Twigg et al. in col. 2, line 60 to col. 3, line 1.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The Breuer et al., Balko et al., Bartley et al., Lepperhoff et al., van Nieuwstadt, Mital et al. and EP 1 544 425 A1 references disclose similar systems.

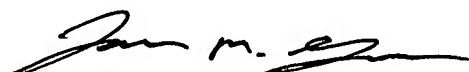
12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M. Greene whose telephone number is (571) 272-1157. The examiner can normally be reached on Monday - Friday (9:00 AM to 5:30 PM).

Art Unit: 1797

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on (571) 272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jason M. Greene
Primary Examiner
Art Unit 1797


10/10/07

jmg
October 10, 2007